

WHAT IS CLAIMED IS:

- 1 1. A method for generating an electronic signal, comprising:
2 determining an update phase-angle associated with the electronic signal;
3 computing a first value of a function based on an interpolation using a first
4 set of data-values that generally describe the function, the update phase-angle and a
5 second set of pre-calculated-values, wherein the pre-calculated values are based on
6 spacing differences between the data-values; and
7 updating the electronic signal based on the first value.
- 1 2. The method of claim 1, wherein the step of interpolating is based on a
2 Lagrange technique.
- 1 3. The method of claim 1, further wherein the data-values are equally-spaced.
- 1 4. The method of claim 3, wherein the pre-calculated values are substantially
2 the same value.
- 1 5. The method of claim 4, wherein the function is a cyclic function and the
2 data-point spacing is expressed in terms of cycles.
- 1 6. The method of claim 5, wherein the function is a sinusoid.
- 1 7. The method of claim 6, wherein the data-values are derived from a table of
2 data-values representing less than a cycle of the sinusoid.
- 1 8. The method of claim 1, wherein the electronic signal is an analog signal
2 having sinusoidal form.
- 1 9. The method of claim 1, further comprising producing a communication
2 signal having embedded information based on the electronic signal.
- 1 10. An apparatus for generating an electronic signal, comprising:
2 a memory that contains an update phase-angle associated with the
3 electronic signal, a first table of data-values that generally describe a function, and a
4 second table of pre-calculated-values, wherein the pre-calculated values are based on
5 spacing differences between the data-values;
6 one or more devices that compute a first value of the function based on an
7 interpolation using the update phase-angle, the first set of data-values from the first table
8 and the second set of pre-calculated-values from the second table; and
9 an interface that updates the electronic signal based on the first value.

1 11. The apparatus of claim 10, wherein the one or more devices use a
2 Lagrange interpolation technique.

1 12. The apparatus of claim 11, wherein the data-values are equally-spaced.

1 13. The apparatus of claim 12, wherein the pre-calculated values are
2 substantially the same value.

1 14. The apparatus of claim 12, wherein the function is a cyclic function and
2 the data-point spacing is expressed in terms of cycles.

1 15. The apparatus of claim 10, wherein the electronic signal is an electronic
2 analog signal having sinusoidal form.

1 16. The apparatus of claim 10, wherein the electronic signal is used to produce
2 a communication signal having embedded information.

1 17. A machine-readable medium including instructions for generating an
2 electronic signal, the instructions being arranged to cause a machine to perform the steps
3 of:

4 determining an update phase-angle associated with the electronic signal;
5 computing a first value of a function based on an interpolation using a first
6 set of data-values that generally describe the function, the update phase-angle and a
7 second set of pre-calculated-values, wherein the pre-calculated values are based on
8 spacing differences between the data-values; and
9 updating the electronic signal based on the first value.

1 18. The machine-readable medium of claim 17, wherein the step of
2 interpolating is based on a Lagrange technique.

1 19. The machine-readable medium of claim 18, wherein the data-values are
2 equally-spaced.

1 20. An apparatus for generating an electronic signal, comprising:
2 a determining means that determines an update phase-angle associated
3 with the electronic signal;
4 a computing means that computes a first value of a function based on the
5 update phase-angle, an interpolation using a first set of data-values that generally describe
6 the function and a second set of pre-calculated-values, wherein the pre-calculated values
7 are based on spacing differences between the data-values; and

8 a generating means that generates the electronic signal based on the first
9 value.

1 21. The apparatus of claim 20, wherein the computing means uses a Lagrange
2 interpolation technique.

1 22. The apparatus of claim 21, wherein the data-values are equally-spaced.

TOPT-40T9960